Key activities of RIC Tsukuba

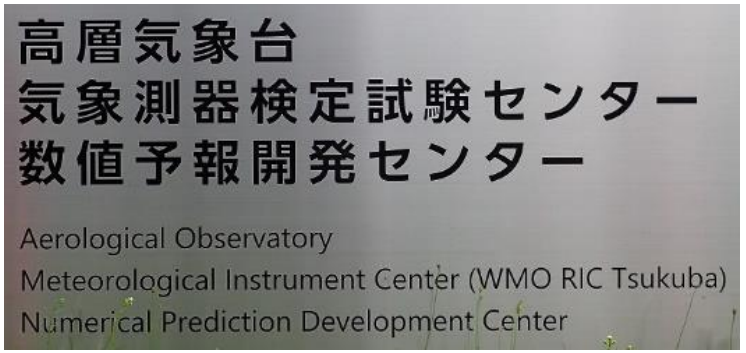
SHIGEOKA Hiroumi

Regional Instrument Centre Tsukuba

Japan Meteorological Agency

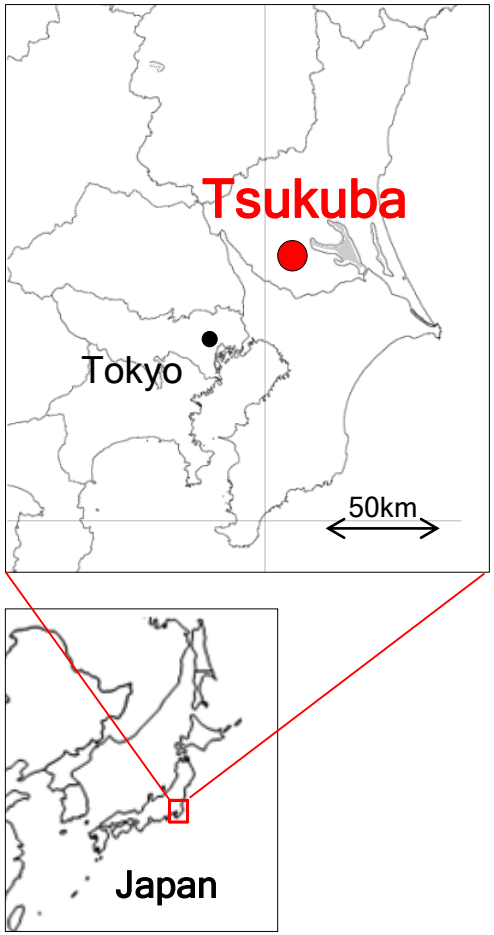
Outline

- Overview of Meteorological Instrument Center as RIC Tsukuba
- Services for Members
- Other activities



Meteorological Instrument Center(MIC), JMA (WMO/RIC Tsukuba)

Meteorological Instrument Center, JMA

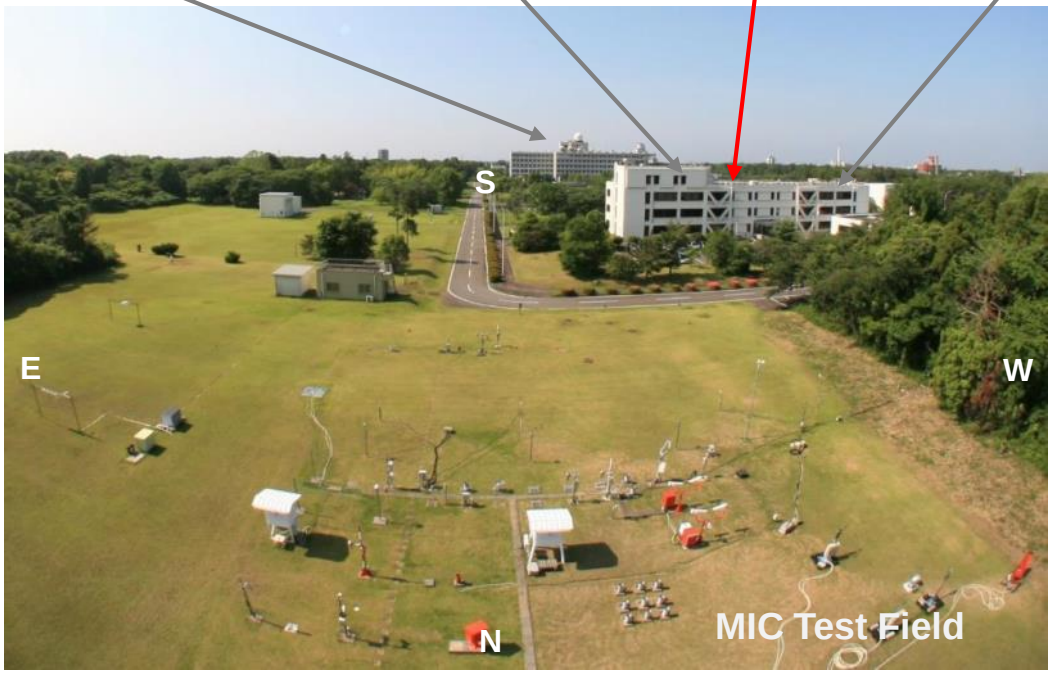


Meteorological Research Institute

Aerological Observatory
GRUAN
WMO/RRC Tokyo

MIC
WMO/RIC
Tsukuba

Numerical Prediction Development Center



Meteorological Instrument Center (MIC) plays a practical role as RIC Tsukuba in JMA.

Calibration equipment
- Standard instruments of JMA -

Certificate of Accreditation

Japan Meteorological Agency

IAJapan hereby accredits the following laboratory as a calibration laboratory based on the Measurement Law as it meets the requirements of relevant international standards. This laboratory also meets the requirements for Mutual Recognition Arrangements (MRA) of ILAC and APLAC.

Accreditation No. JCSS0295

COPY

Name of Laboratory
Meteorological Instrument Center, Observation Division, Observation Department, Japan Meteorological Agency

Address of Laboratory
1-2 Nagamine, Tsukuba-shi, Ibaraki 305-0052, Japan

Accreditation Scope
Temperature, Pressure, Humidity (as attached)

Accreditation Criterion
ISO/IEC 17025:2005

Date of Initial Accreditation : 2012-08-30
Latest Date of Issue : 2017-08-29

Kyoko Yamasaki
Chief Executive, IAJapan
National Institute of Technology and Evaluation

MIC, JMA is accredited to ISO/IEC 17025
- Temperature
- Pressure
- Humidity

Standard thermometer

- Platinum resistance thermometer
  NSR-160
  (Netsushin, Japan)
- Alternating current bridge
  F-600
  (ASL, UK)
- Water triple-point cell
  (Hart Scientific, USA)
- 100Ω Standard resistor
  (Tinsley, UK)

Standard barometer

Air piston gauge
AV-02
(Futaba Sokki, Japan)

Standard hygrometer

Chilled-mirror dewpoint hygrometer

- Display
  DewStar S-1M-0
  (Shinyei technology, Japan)
- Sensor
  DewStar S-2S-0K
  (Shinyei technology, Japan)

Calibration chambers

Chamber for thermometers

Liquid bath type
Range: - 85 - +50 °C
(Daiichi - Kagaku, Japan)

Air chamber type
Range: - 40 - +50 °C
(Espec, Japan)

Chamber for hygrometers

Wet and dry air mixing type
Range: 15 - 95 %RH
(Daiichi - Kagaku, Japan)

Wet and dry air mixing type
Range: 10 - 95%RH, -10 - +50 °C
(Daiichi - Kagaku, Japan)

Chamber for barometers

Range: 4 - 1050 hPa
(Toyo Koatsu, Japan)

RIC Tsukuba supports WMO Members for calibration of their standards by using these standards and chambers.

Services for Members

- Traceability in meteorological instruments -

Non radiation

Temperature, Humidity, Pressure, ...

International Standard (SI unit)

National Primary Standard (National metrology institute)

National meteorological standard

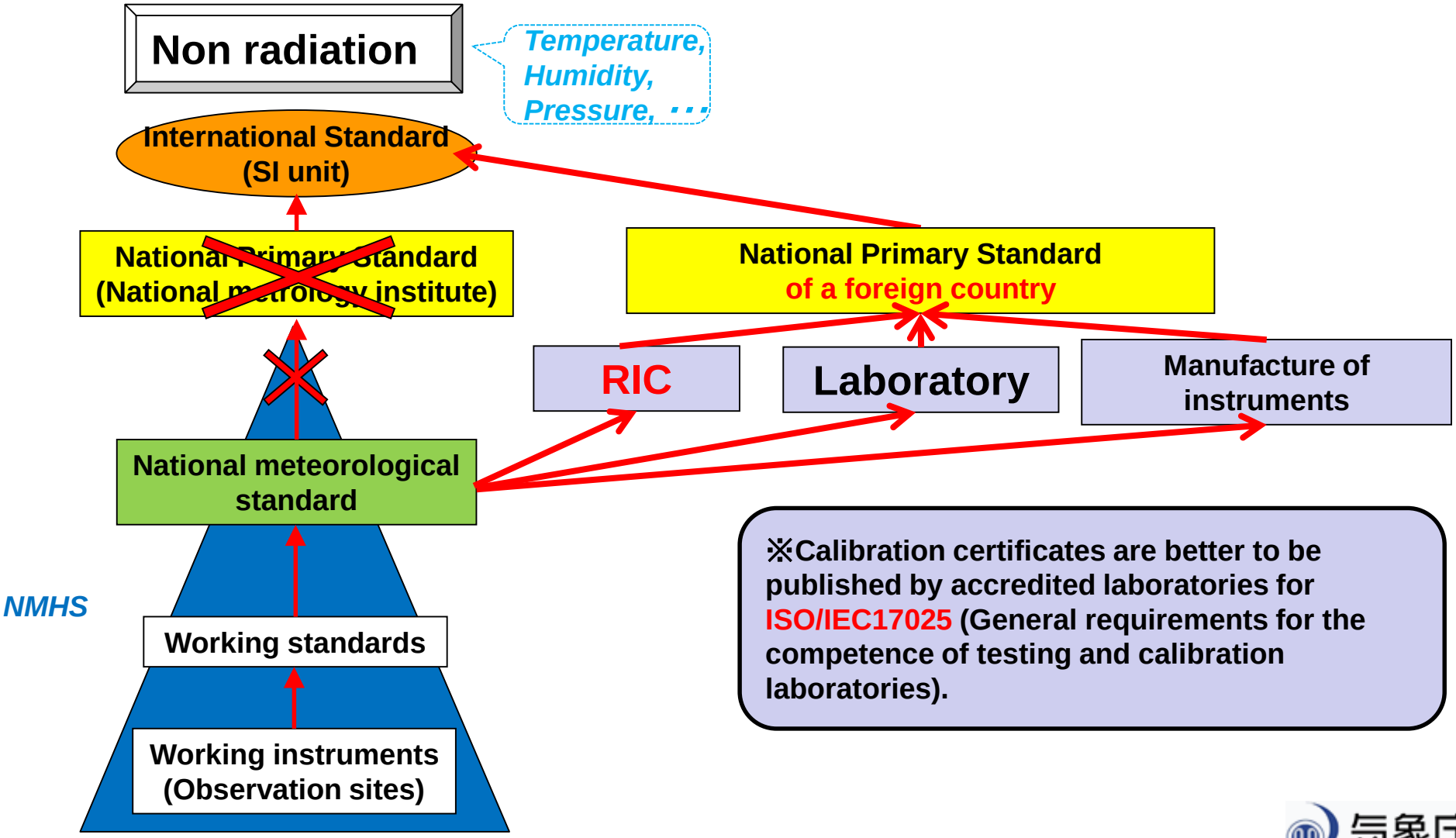
NMHS

Working standards

Working instruments (Observation sites)

Services for Members

- Traceability in meteorological instruments -



※Calibration certificates are better to be published by accredited laboratories for ISO/IEC17025 (General requirements for the competence of testing and calibration laboratories).

Services for Members

- Calibration for Members at RIC Tsukuba (listed since 2013) -

Month/year	Country/region	Standard instruments calibrated
Oct. 2013	Bangladesh	*Barometer,* thermometer, hygrometer
Jan. 2015	Hong Kong, China	Anemometer
May 2015	Indonesia	Pyranometer
Jun. 2015	Fiji	*Barometer, thermometer, hygrometer*
Nov. 2015	Philippines	*Barometer*
Jan. 2016	Mozambique	*Barometer, thermometer*
Jan. 2016	Sri Lanka	*Barometer*
Jun. 2016	Fiji	*Barometer, thermometer, hygrometer*
Jan. 2017	Philippines	Anemometer
Apr. 2018	Vanuatu	*Barometer*
Jun. 2019	Thailand	*Barometer, thermometer, hygrometer,* anemometer
Jul. 2019	Mauritius	*Barometer, thermometer*
Nov. 2019	Myanmar	*Barometer, thermometer*
Nov 2019	Philippines	*Barometer*

Note: Red characters show the ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) calibration.

Services for Members

- RIC Tsukuba Package -

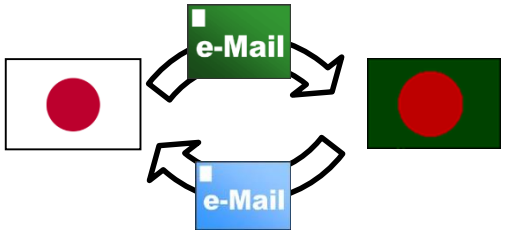
Synergy of the expertise of RIC Tsukuba in the instrument calibration and the international assistance mechanism of JICA

JMA — Calibration Technology

JICA — Bilateral Assistance

1. Survey
2. Provision of equipment
3. Training
4. Follow-up

Bangladesh in 2013



(JICA: Japan International Cooperation Agency)

Services for Members

- RIC Tsukuba Package -

For improving the quality of meteorological data

Training for Bangladesh staff (Bangladesh, Nov., 2013)

Training for Mozambique staff (RIC Tsukuba, Feb., 2016)

Training for 10 Pacific Island Countries staff (Fiji, Nov., 2015)

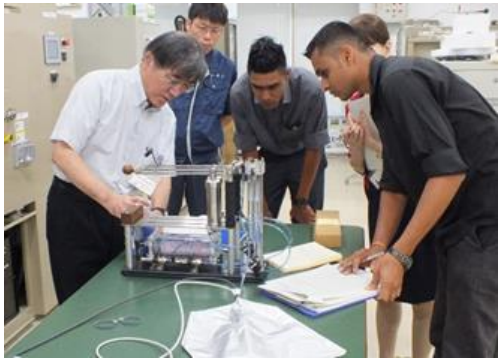
Training for Sri Lanka staff (RIC Tsukuba, Feb., 2016)

Services for Members

- RIC Tsukuba Package -

For improving the quality of meteorological data

Training for Mozambique staff
(Mozambique, Aug., 2016)



Training for Fiji staff
(RIC Tsukuba, Aug., 2018)

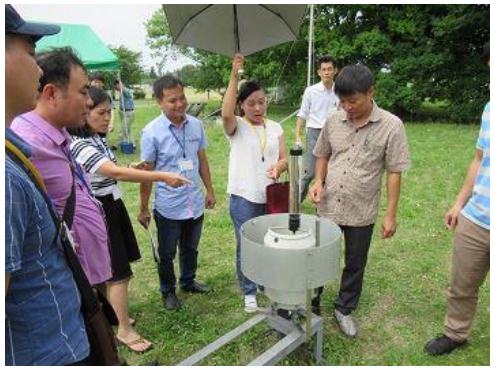
Training for Sri Lanka staff
(Sri Lanka, Jun., 2017)

Training for Pacific Island Countries staff (Fiji, Sep.- Oct., 2018)

Services for Members

- RIC Tsukuba Package (ongoing) -

For improving the quality of meteorological data



Training for Vietnam staff
(RIC Tsukuba, Jul., 2019)

Training for Mauritius staff
(RIC Tsukuba, Aug., 2019)

Training for Myanmar staff
(RIC Tsukuba, Oct., 2019)

Training for Mauritius staff
(Mauritius, Jan., 2020)

Other activities

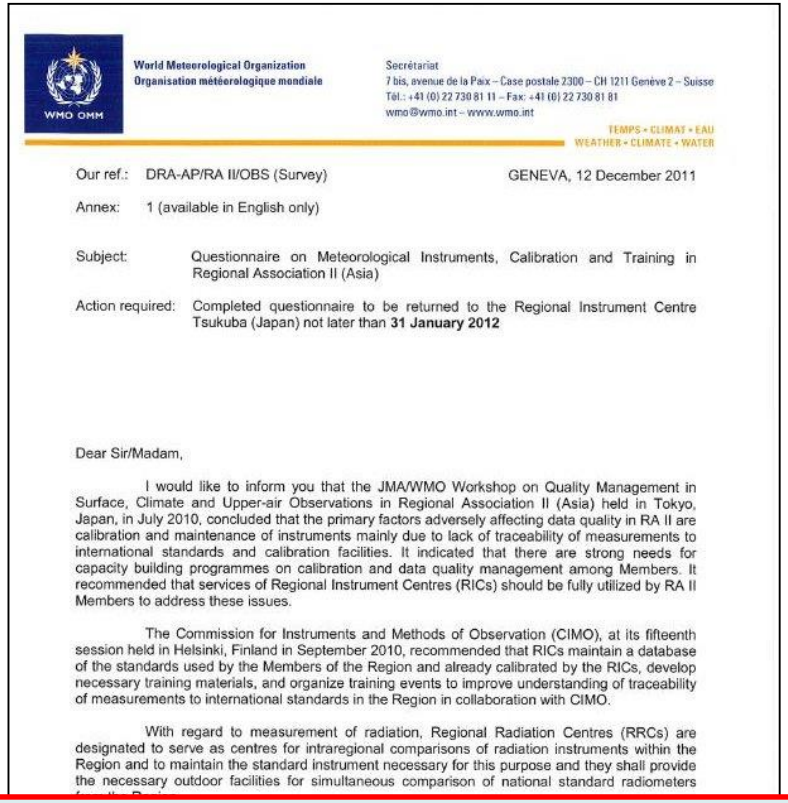
- Collaboration with RIC-Beijing and RIC-Manila -

RIC-Tsukuba and RIC-Beijing conducted reciprocal visits of their experts (2010)

Cooperation between RIC-Tsukuba and RIC-Manila (2016)

Other activities

- WMO Survey of Calibration of Meteorological Instruments in RA II -



World Meteorological Organization
Organisation météorologique mondiale

Secrétariat
7 bis, avenue de la Paix – Case postale 2300 – CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11 – Fax: +41 (0) 22 730 81 81
wmo@wmo.int – www.wmo.int

TEMPS • CLIMAT • EAU
WEATHER • CLIMATE • WATER

Our ref.: DRA-AP/RA II/OBS (Survey) GENEVA, 12 December 2011

Annex: 1 (available in English only)

Subject: Questionnaire on Meteorological Instruments, Calibration and Training in Regional Association II (Asia)

Action required: Completed questionnaire to be returned to the Regional Instrument Centre Tsukuba (Japan) not later than **31 January 2012**

Dear Sir/Madam,

I would like to inform you that the JMA/WMO Workshop on Quality Management in Surface, Climate and Upper-air Observations in Regional Association II (Asia) held in Tokyo, Japan, in July 2010, concluded that the primary factors adversely affecting data quality in RA II are calibration and maintenance of instruments mainly due to lack of traceability of measurements to international standards and calibration facilities. It indicated that there are strong needs for capacity building programmes on calibration and data quality management among Members. It recommended that services of Regional Instrument Centres (RICs) should be fully utilized by RA II Members to address these issues.

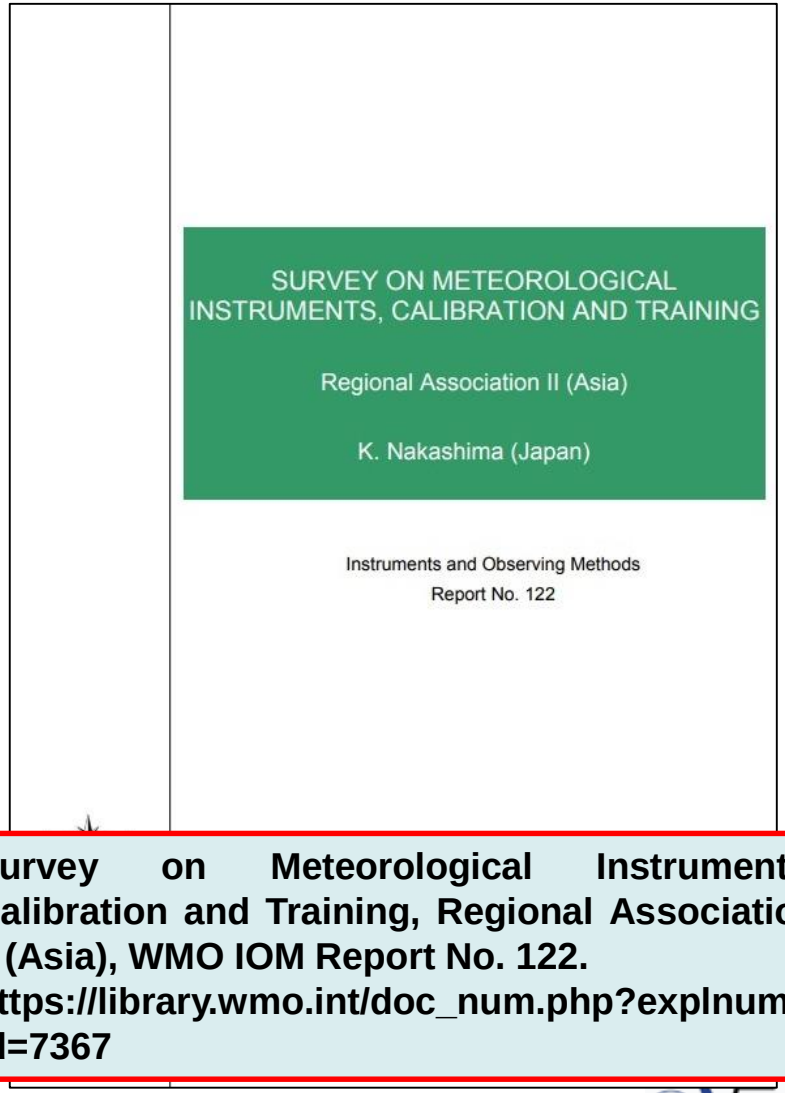
The Commission for Instruments and Methods of Observation (CIMO), at its fifteenth session held in Helsinki, Finland in September 2010, recommended that RICs maintain a database of the standards used by the Members of the Region and already calibrated by the RICs, develop necessary training materials, and organize training events to improve understanding of traceability of measurements to international standards in the Region in collaboration with CIMO.

With regard to measurement of radiation, Regional Radiation Centres (RRCs) are designated to serve as centres for intraregional comparisons of radiation instruments within the Region and to maintain the standard instrument necessary for this purpose and they shall provide the necessary outdoor facilities for simultaneous comparison of national standard radiometers

"Questionnaire on Meteorological Instruments, Calibration and Training in Regional Association II (Asia)"

Member : RIC Tsukuba, RIC Beijing, RRC Tokyo, RRC Pune

Date:12 December 2011



SURVEY ON METEOROLOGICAL INSTRUMENTS, CALIBRATION AND TRAINING

Regional Association II (Asia)

K. Nakashima (Japan)

Instruments and Observing Methods
Report No. 122

Survey on Meteorological Instruments, Calibration and Training, Regional Association II (Asia), WMO IOM Report No. 122. https://library.wmo.int/doc_num.php?explnum_id=7367

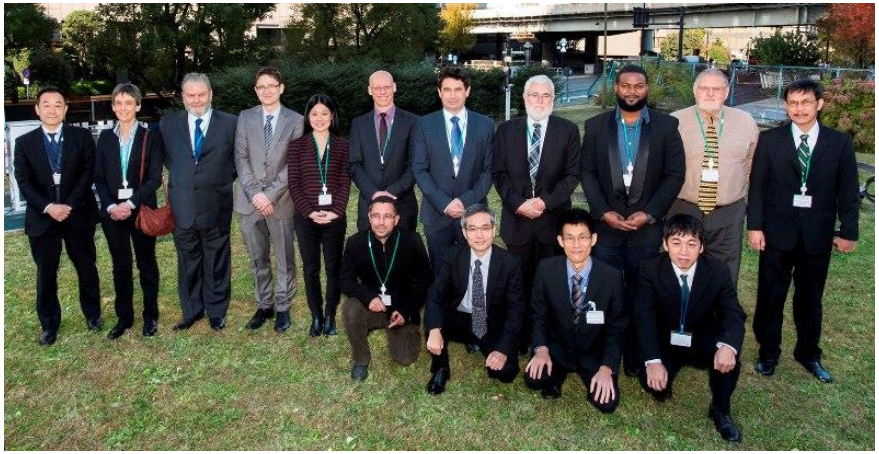
Other activities

- JMA/WMO Training Workshop on Calibration and Maintenance of Meteorological Instruments in RA II (ASIA) (19-22 February 2013 Tokyo, Tsukuba, Japan) -

https://www.jma.go.jp/jma/en/Activities/RIC_Workshop_2013/RIC_Workshop_2013.html

Other activities

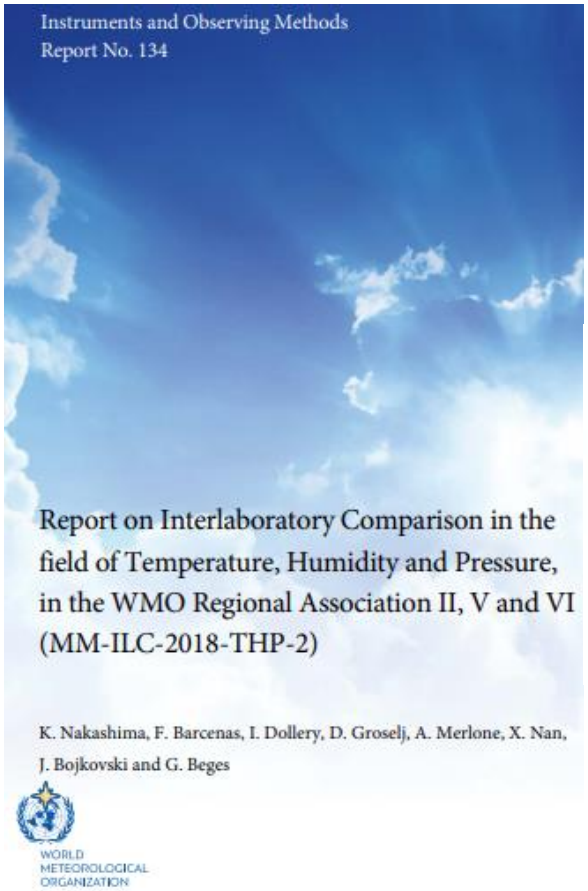
- Second session of the WMO/CIMO Expert Team on Operational Metrology (ET-OpMet)
(Tokyo, Japan, 27 - 30 November 2017) -



https://www.jma.go.jp/jma/en/photogallery/session_of_ET-OpMet_2017.html

Other activities

- Interlaboratory Comparison (ILC) in RA-II, V and VI -



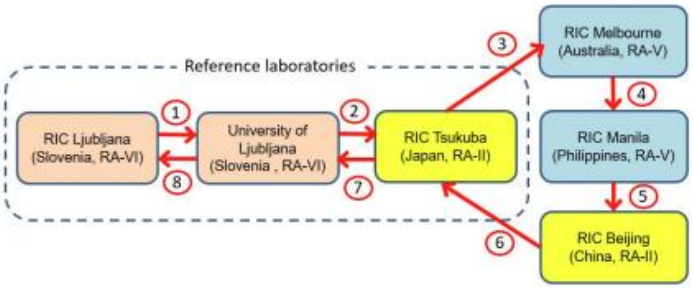
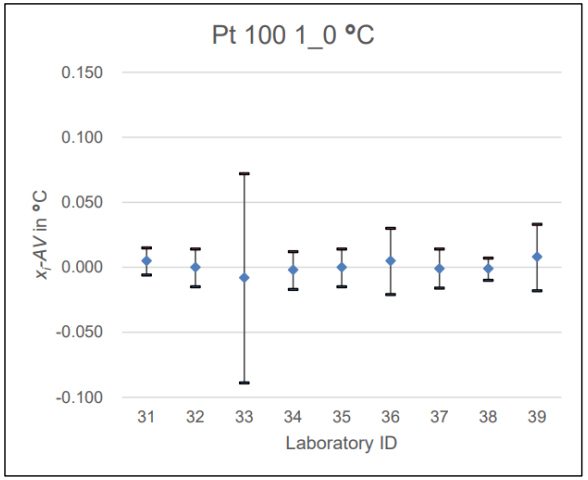


Figure 1: Transportation route



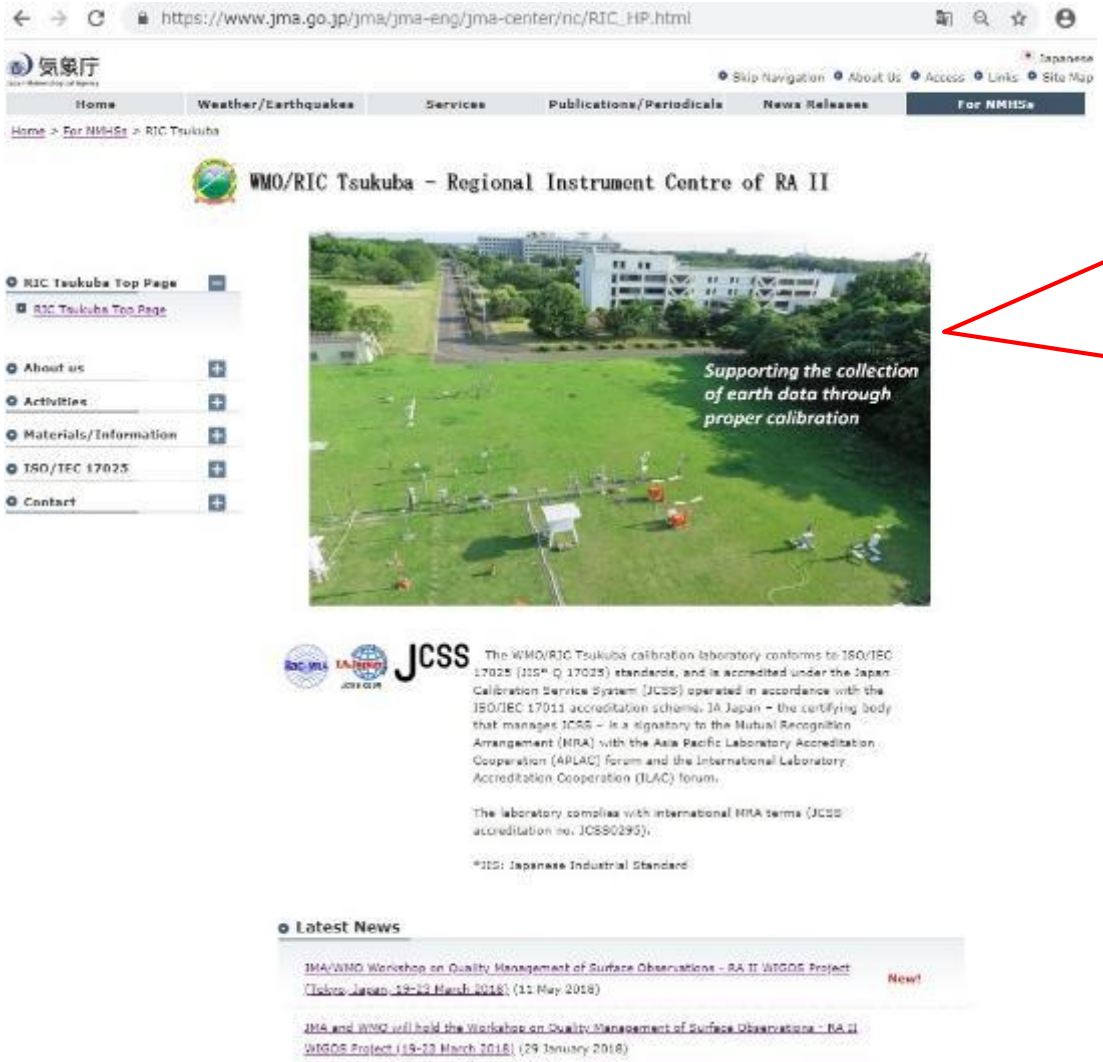
WMO

METEOMET
Metrology for Meteorology

https://library.wmo.int/doc_num.php?explnum_id=10633

How to get information about RIC Tsukuba?

- RIC Tsukuba's own website -



- About RICs
- Overview of RIC Tsukuba
- ISO/IEC 17025
- Quality control of observational instruments
- Activity
- Material

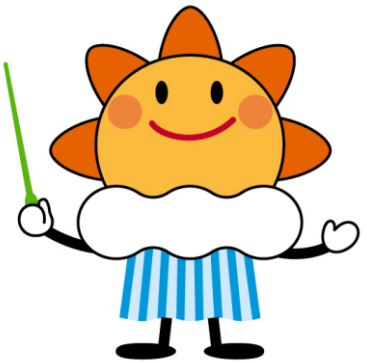
etc.

https://www.jma.go.jp/jma/jma-eng/jma-center/ric/RIC_HP.html

Summary

- **Traceability and Calibration of instruments are essential for quality assurance of observation data.**
- **RICs can assist and advise Members in these areas.**
- **Feel free to contact RICs if you have any questions.**

Thank you for your attention !



Mascot of JMA ”Harerun”